ICE-00032

Service Manual

TV 4136VT mit Scartbuchse

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This manual is the latest at the time of printing, and does not include the modification which may be made after the printing, by the constant improvement of product.

M9215-05/21

ICE-00032

ITS Service D. Radeck GmbH

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für ITS- und ICE-Produkte

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Service Manual

[redacted]

TV 4136VT mit Scartbuchse
TV 6136VT mit Scartbuchse
Serv.-Man. 100035

Bei technischen Änderungen können Ergänzungsblätter angefordert werden.

Specifications are subject to change without notice.

Bitte beachten Sie die evtl. einliegenden Serviceinformationen.

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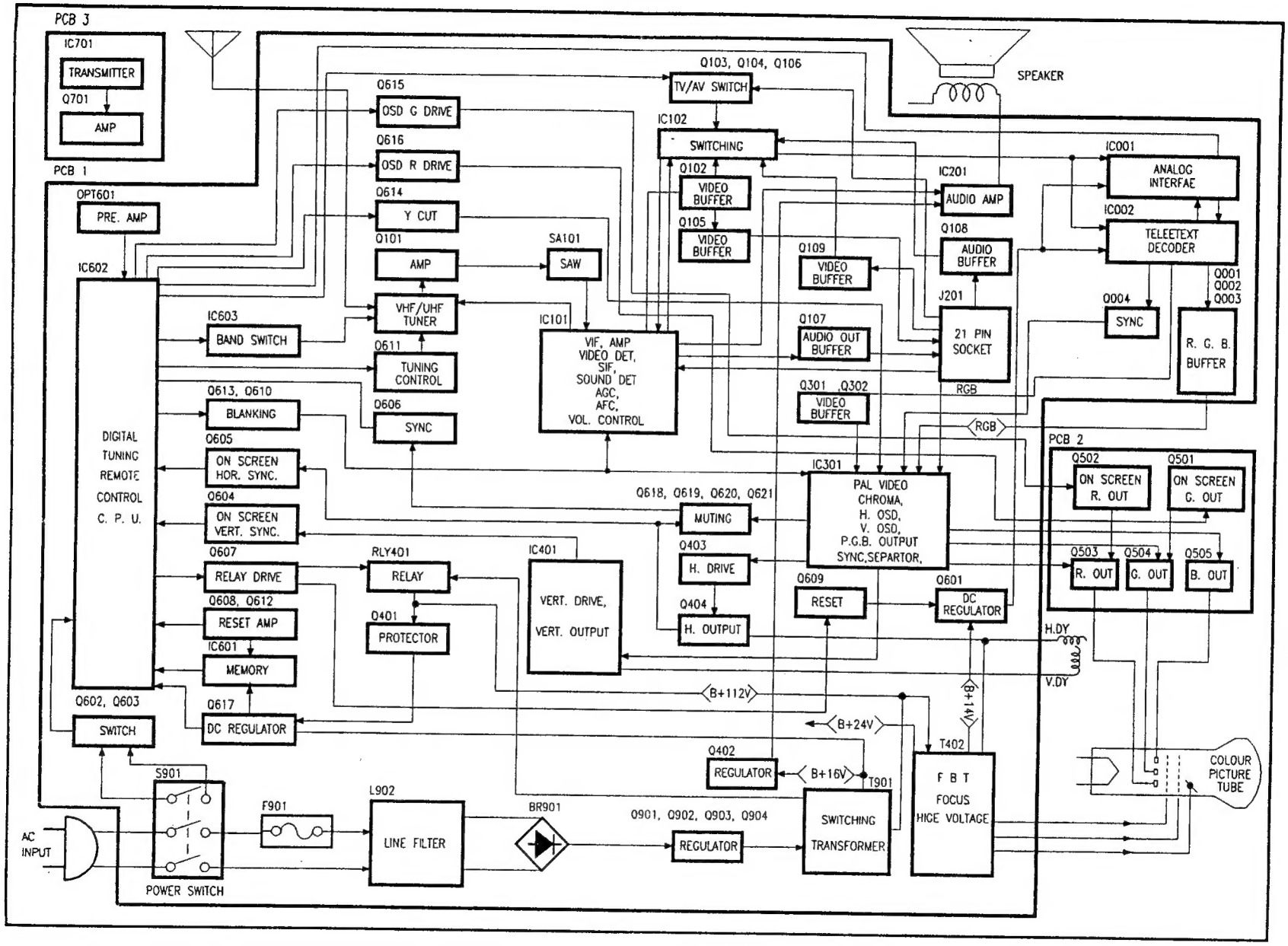
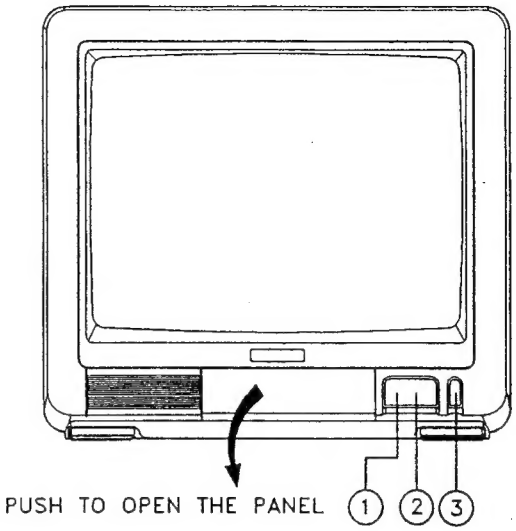
SPECIFICATION

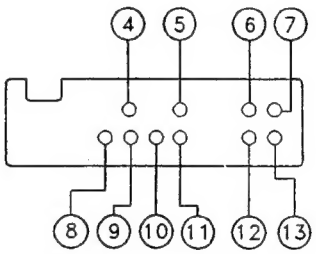
SYSTEM		:	PAL-B/G		
DESTINATION		:	W.GERMANY		ITALY
CHANNEL COVERAGE	VHF LOW	:	E2 -E4, SS1 - SS3	CH	A - C CH
			S1 - S2	CH	
	VHF HIGH	:	E5 - E12, S3 - S20	CH	D - H CH
	UHF		21 - 69	CH	21 - 69 CH
FREQUENCY RANGE	VHF LOW	:	48.25 - 112.25	MHz	
	VHF HIGH	:	119.25 - 294.25	MHz	
	UHF	:	471.25 - 855.25	MHz	
SCANNING	LINES	:	625	LINES	
	HORIZONTAL	:	15625	Hz	
	VERTICAL	:	50	Hz	
IF FREQUENCY	VIDEO	:	38.9	MHz	
	SOUND	:	33.4	MHz	
	CHROMA	:	34.47	MHz	
VISION/SOUND SEPARATION		:	5.5	MHz	
SENSITIVITY	VHF LOW	:	32	uV	
	VHF HIGH	:	56	uV	
	UHF	:	80.	uV	
OUTPUT POWER	MAXIMUM	:	900	mW	
	10% THD	:	700	mW	
C.R.T.		:	14" (36 cm) Diagonal, 22.5 mm Neck Diameter 90° Deflection Angle		
SPEAKER		:	50 mm x 90 mm, 16 Ohm		
ANTENNA IMPEDANCE		:	75	Ohm	
POWER CONSUMPTION		:	70	Watts	
VIDEO INPUT		:	1vp-p (POSITIVE VIDEO) 75 OHm IMPEDANCE		
AUDIO INPUT		:	0.5V r.m.s. (1 KHz) 47K OHm IMPEDANCE		

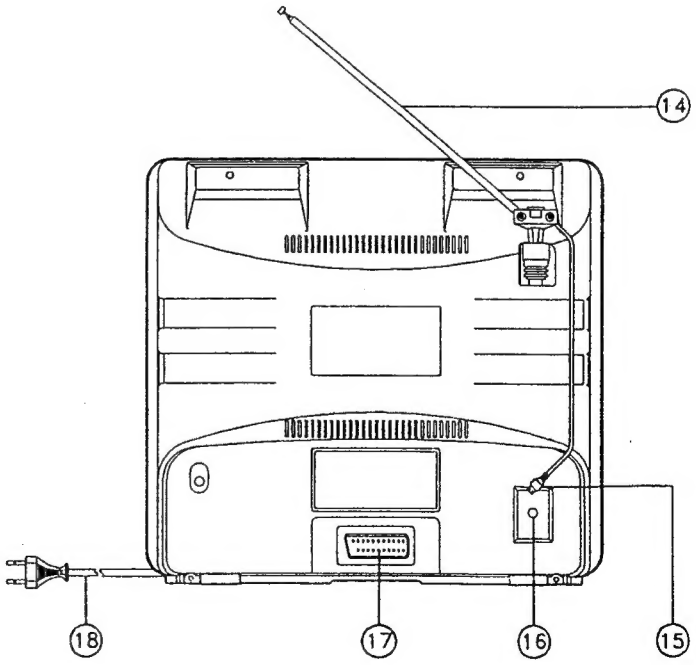

PCB 3
IC701
TRANSMITTER
Q701
AMP
PCB 1
OPT601
PRE. AMP
IC602
DIGITAL
TUNING
REMOTE
CONTROL
C. P. U.
IC603
BAND SWITCH
Q613, Q610
BLANKING
Q605
ON SCREEN
HOR. SYNC.
Q604
ON SCREEN
VERT. SYNC.
Q607
RELAY DRIVE
Q608, Q612
RESET AMP
IC601
MEMORY
Q602, Q603
SWITCH
Q617
DC REGULATOR
Q615
OSD G DRIVE
Q616
OSD R DRIVE
Q614
Y CUT
Q101
AMP
VHF/UHF
TUNER
Q611
TUNING
CONTROL
Q606
SYNC
SA101
SAW
IC101
VIF, AMP
VIDEO DET,
SIF,
SOUND DET
AGC,
AFC,
VOL. CONTROL
RLY401
RELAY
Q401
PROTECTOR
IC401
VERT. DRIVE,
VERT. OUTPUT
Q103, Q104, Q106
TV/AV SWITCH
IC102
SWITCHING
Q102
VIDEO
BUFFER
Q105
VIDEO
BUFFER
Q618, Q619, Q620, Q621
MUTING
Q403
H. DRIVE
Q404
H. OUTPUT
Q402
REGULATOR
Q109
VIDEO
BUFFER
Q107
AUDIO OUT
BUFFER
Q301 ,Q302
VIDEO
BUFFER
IC301
PAL VIDEO
CHROMA,
H. OSD,
V. OSD,
P.G.B. OUTPUT
SYNC,SEPARTOR,
Q609
RESET
Q601
DC
REGULATOR
SPEAKER
IC201
AUDIO AMP
Q108
AUDIO
BUFFER
J201
21 PIN
SOCKET
RGB
IC001
ANALOG
INTERFAE
IC002
TELEETEXT
DECODER
Q001
Q002
Q003
Q004
SYNC
R. G. B.
BUFFER
PCB 2
Q502
ON SCREEN
R. OUT
Q501
ON SCREEN
G. OUT
Q503
R. OUT
Q504
G. OUT
Q505
B. OUT
H.DY
V.DY
B+112V
B+24V
B+14V
B+16V
T402
F B T
FOCUS
HIGE VOLTAGE
T901
SWITCHING
TRANSFORMER
0901, Q902, Q903, Q904
REGULATOR
COLOUR
PICTURE
TUBE
AC
INPUT
S901
POWER SWITCH
F901
L902
LINE FILTER
BR901

CONTROL LOCATION

1. Remote Sensor
2. Power Indicator
3. Power Switch (ON/OFF)
4. Auto Tune Button
5. Picture Selector Button
6. Volume/Picture Function Button (+)
7. Programme Up Button
8. TV/AV Button
9. Tuning Down Button
10. Tuning Up Button
11. Memory Button
12. Volume/Picture Function Button (−)
13. Programme Down Button
14. Rod Antenna
15. Rod Antenna Connector
16. Antenna Input (Tuner)
17. 21 Pin Scart Socket
18. AC Power Cord







ALIGNMENT INSTRUCTION

I. PLEASE READ BEFORE ATTEMPTING SERVICE

1. Never disconnect any leads while receiver is in operation.
2. Disconnect all power before attempting any repairs.
3. Do not short any portion of the circuit while power is on.
4. For safety reasons, all parts replaced should be identical, (for parts and part numbers see parts list).
5. Before alignment the set must be pre-heated for 30 minutes or more and erase magnetism thoroughly from CRT front chassis frame by erase coil.

II. TEST EQUIPMENT

1. VIF Sweep Generator
2. SIF Sweep Generator
3. Colour Bar/Dot/Cross Hatch Generator
4. DC Power Supply (14V)
5. Oscilloscope
6. Vacuum Tube Voltmeter
7. Voltage Meter
8. High Voltage Meter
9. Ampere Meter (0.5 Class, DC 3mA Max.)
10. Demagentizing Coil
11. Philips Pattern Generator
12. Frequency Counter
13. Continuous Waveform Generator
14. 21 Pin Connector

III. TANK COIL ALIGNMENT

A. PREPARATION STEP (SEE FIG.2)

1. Connect OUTPUT lead of VIF Sweep Generator between TP 109 (SA 101 Pin 5) and GND. (80dB)
2. Connect lead of FROM DET between TP 106 and GND.
3. Supply DC +14V to ⊕ lead of D408.
4. Apply a +5.2V DC dummy AGC bias voltage to TP 104.

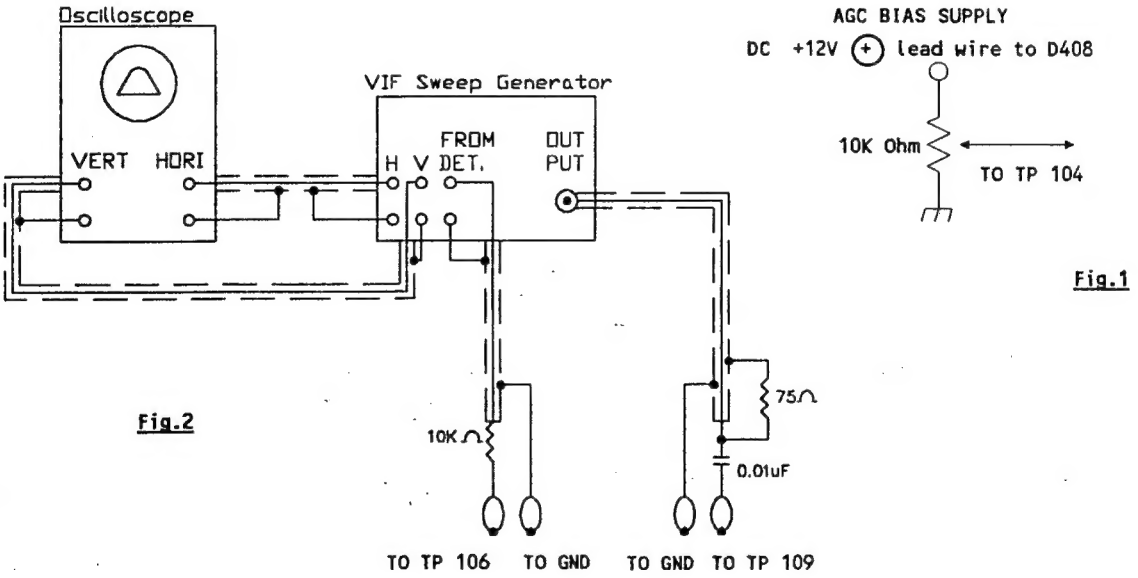


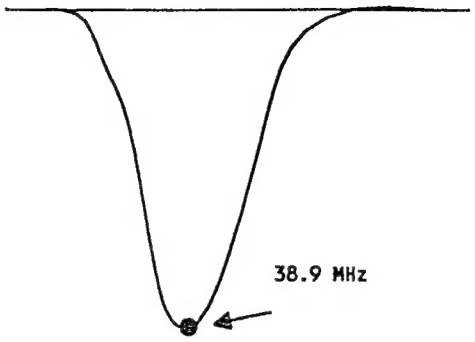
Fig.1

Fig.2

B. ALIGNMENT STEP (See FIG.3)

1. Adjust T105 to obtain response cause at 38.9 MHz.

Fig.3



IV. VIF ALIGNMENT

A. PREPARATION STEP

1. Connect output lead of VIF Sweep Generator between tuner test point TP and tuner case. (70dB)
2. Connect resistor (100 Ohm) between TP 101 and TP 102.
3. Supply DC +14V to ⊕ lead of D408.
4. Supply RF AGC bias voltage to TP 104.

B. ALIGNMENT STEP

1. Connect the DETECTOR Ⓐ to (TP108). (See Fig.4a)
2. Connect Sync. Oscilloscope through the DETECTOR Ⓑ.
3. Increase the output level of Sweep Generator in 50 dBuV, to obtain the waveform as in Fig.4b.
4. Adjust T101 for 31.9 MHz as shown in Fig.4b.
5. Adjust T102 for 40.4 MHz as shown in Fig.4b.
6. Connect the FROM DET to the TP 106 without through the detector.
7. Subtract 50 dB to adjust T103 and then to adjust tuner converter coil to obtain the waveform as in Fig.4c.

Fig.4a

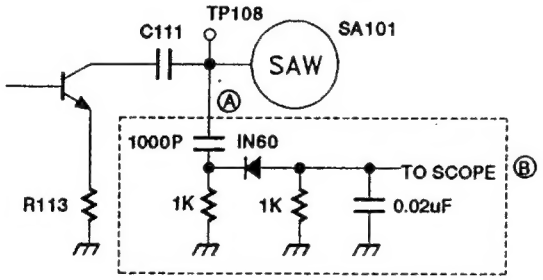


Fig.4b

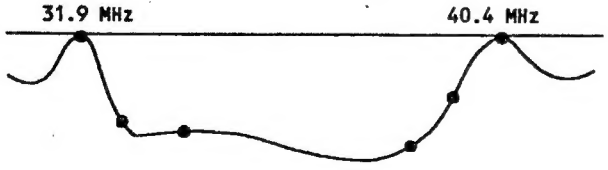
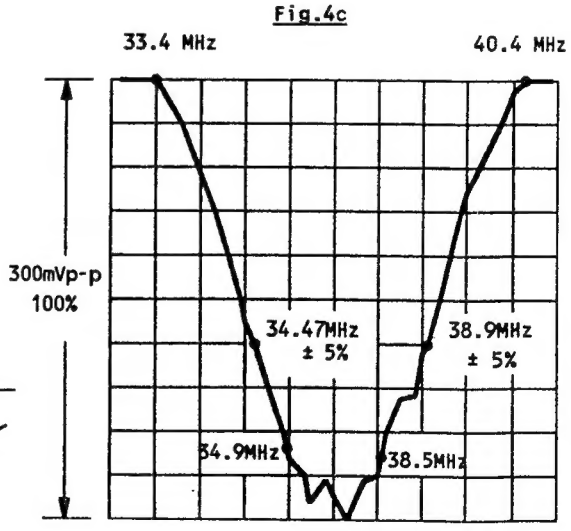


Fig.4c



V. AFC ALIGNMENT

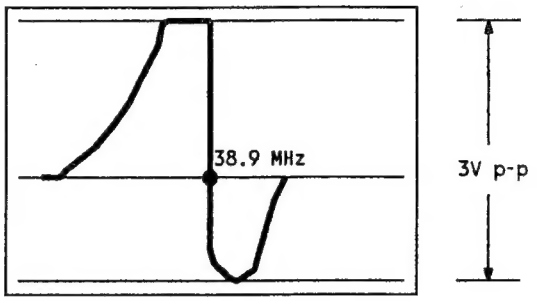
A. PREPARATION STEP

1. Connect RF AGC 5.2V bias voltage at TP 104.
2. Remove the damping resistor (100 Ohm) at TP 101, TP 102.
3. Connect output lead of Continuous Waveform Generator to tuner point TP & tuner case. (85dB)
4. Connect lead of FROM DET between TP 107 and GND.
5. Supply DC +14V to ⊕ lead of D408.

B. ALIGNMENT STEP

1. Adjust T106 make the picture carrier 38.9 MHz is centered as in Fig.5.
2. After AFC alignment to join the Soldering Pad of C147 GND to GND.

Fig.5

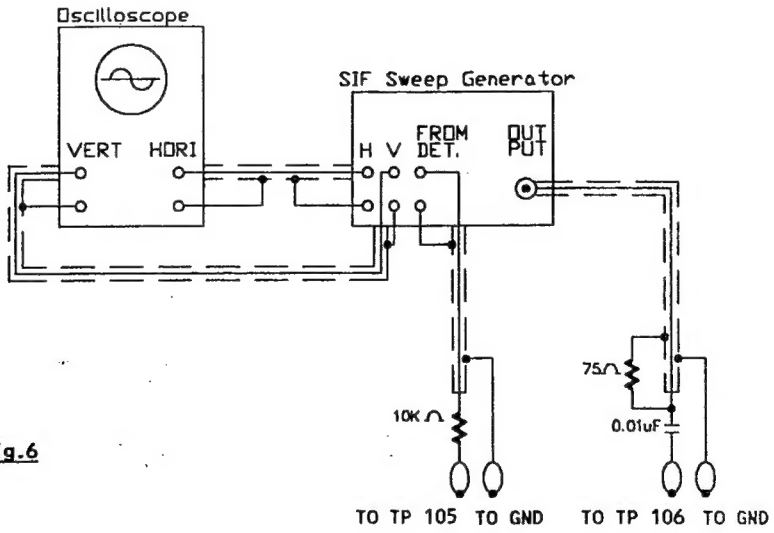


VI. SIF ALIGNMENT

A. PREPARATION STEP (SEE FIG.6)

1. Connect output lead of SIF Sweep Generator between TP 106 and GND.
2. Connect lead of FROM DET between TP 105 and GND.
3. Supply DC +14V to ⊕ lead of D408.

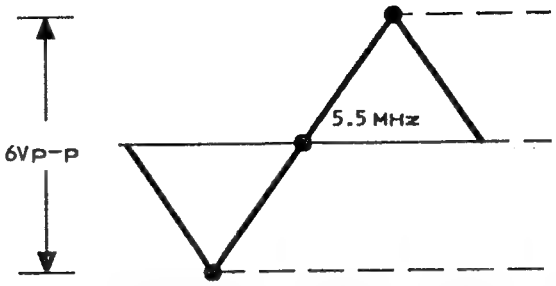
Fig.6



B. ALIGNMENT STEP

1. Adjust output of Sweep Generator to achieve 6Vp-p between markers of 100 KHz.
2. Adjust T104 so that sound carrier is centered as in Fig.7.
3. Confirm the waveform as in Fig.7.
   NOTE : Input Level : 90 dB.

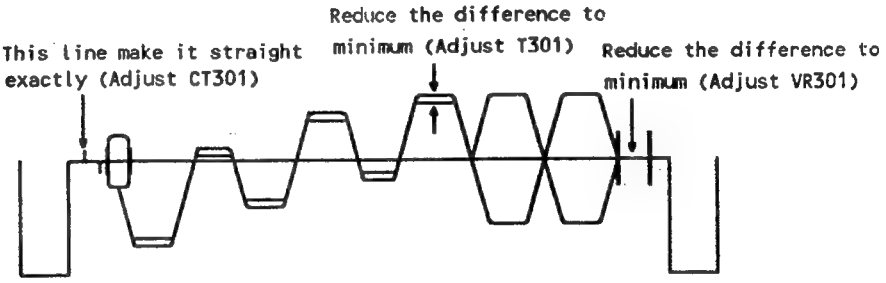
Fig.7



VII. COLOUR DEMODULATOR ALIGNMENT, DELAY LINE ALIGNMENT

1. Receive Philips Pattern.
2. Set Contrast control to minimum position.
3. Set Colour control to maximum position.
4. Connect Oscilloscope to TP 301 (B-out).
5. Adjust CT301 to obtain the waveform as in Fig.8.
6. Adjust VR301 to obtain the waveform as in Fig.8.
7. Adjust T301 to obtain the waveform as in Fig.8.

Fig.8



VIII. B+ ADJUSTMENT

1. Connect the digital voltmeter to TP 401.
2. Adjust semi-fixed resistor VR901 until meter reading DC 112.25V ± 0.25V.

IX. HORIZONTAL CIRCUIT ADJUSTMENT

1. Receive Monoscope Pattern input signal 80 dBuV.
2. IC301 (PIN 28,29) short by 1K Ohm resistor.
3. Adjust VR303 to obtain the picture running at center.
4. Remove the 1K Ohm resistor.

X. VERTICAL CIRCUIT ADJUSTMENT

1. Receive the Monoscope Pattern.
2. Connect the Frequency Counter between V-DEFLECTION YORK and GROUND.
3. Connect lead wire from TP 106 TO GND.
4. Adjust V-HOLD (VR304) to the reading 44 Hz.
5. Remove lead wire TP 106 TO GND.
6. Adjust V-SIZE (VR401) control to obtain a normal picture.

XI. WHITE BALANCE ADJUSTMENT

1. Receive a black and white picture signal.
2. Turn the red, green and blue LOW LIGHT (VR501, VR502, VR504) controls to middle position and turn the DRIVE (VR503, VR505) control to middle position.
3. Turn the Screen control on the FBT to minimum position.
4. Set the Sub-Brightness (VR305) control to middle position, then set the Contrast control and Brightness control, Colour control to minimum position.
5. CN403 (PIN 1,2) with Join together.
6. Connect volt meter b etween (R508) and ground, and adjust Brightness control to the reading of DC 138V (±2V). If DC 138V cannot be obtain, adjust the Sub-Brightness control (VR305).
7. Slowly turn the Screen control clockwise to the point where a horizontal line just illuminates.
8. Adjust VR501 to get a red horizontal line on CRT.
9. Adjust VR502 to get a yellow horizontal line on CRT.
10. Adjust VR504 to get a white horizontal line on CRT.
11. Take the joiner out of CN403.
12. Adjust Drive (VR503, VR505) control to obtain a uniform white picture.

XII. FOCUS ADJUSTMENT

1. Set Contrast control to maximum position and Brightness control to middle position.
2. Adjust Focus control (on the FBT) to obtain a sharpest picture on the CRT.

XIII. RF AGC

1. Receive the signal of BAND-III (VHF HIGH) channel and set the AFC switch to 'ON' position.
2. Set the input field strength in 62 ± 3dB.
3. Adjust RF AGC control (VR101) to the point where noise is disappeared.

XIV. SUB-BRIGHTNESS ALIGNMENT

1. Receive the Monoscope Pattern
2. Set controls as follows :
   BRIGHTNESS control ..... MID. position
   CONTRAST control ..... MID. position
   COLOUR control ..... MID. position
3. Adjust SUB-BRIGHTNESS (VR305) control to get the nine step of the GREY SCALE in the Monoscope Pattern.

XV. COLOUR PURITY ADJUSTMENT (SEE FIG.9)

BEFORE ALL ADJUSTMENT DESCRIBED BELOW ARE ATTEMPTED, V-HOLD, H-HOLD, V-HIGH, B+ VOLTAGE AND FOCUSING ADJUSTMENT MUST BE COMPLETED.

1. Place the TV receiver facing NORTH or SOUTH.
2. Plug in TV receiver and turn in on.
3. Operate the TV receiver over 30 minutes.
4. Fully degauss the TV receiver by using an external degaussing coil.
5. Receive a crosshatch pattern and adjust the static convergence, control roughly.
6. Loosen the clamp screw of the deflection yoke and pull the deflection yoke towards you.
7. Fully turn the red and blue Drive (VR503, VR505) controls counter-clockwise.
8. Adjust the purity magnets so that green field is obtained at the center of the screen.
9. Slowly push the deflection yoke towards bell of CRT and set it where a uniform green field is obtained.
10. Tighteen the clamp screw of the deflection yoke.

XVI. ON SCREEN ADJUSTMENT

1. Receive the Monoscope Pattern.
2. Adjust ON SCREEN (VR601) for adjust the lettering to center of CRT.

XVII. CONVERGENCE ADJUSTMENT (SEE FIG.9)

1. Receive a dotted pattern.
2. Unfix the convergence magnet clamper and align red with blue dots at the center of the screen by rotating (R,B) static convergence magnets.
3. Align Red/Blue with green dots at the center of the screen by rotating (RB-G) static convergence magnet.
4. Fix the convergence magnets by turning the clamper.
5. Remove the DY wedges and slightly tilt the deflection yoke horizontally and vertically to obtain the good overall convergence.
6. Fix the deflection yoke by wedges.
7. If purity error is found, follow "PURITY ADJUSTMENT" instructions.

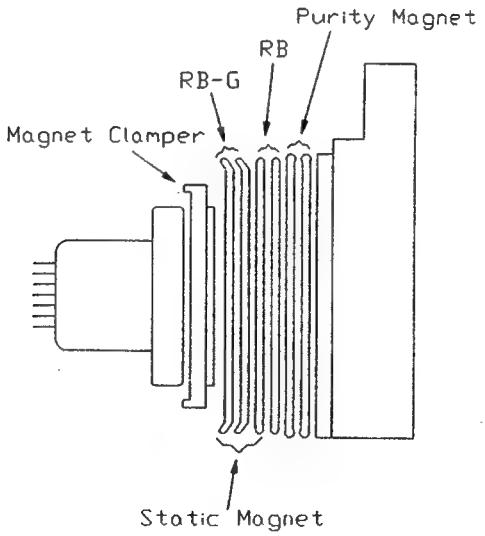
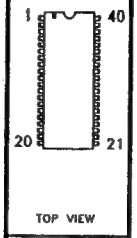
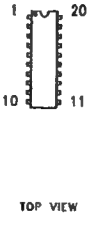
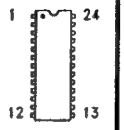
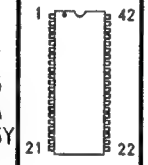
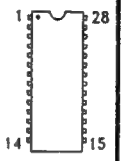
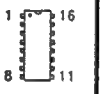
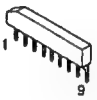


Fig.9

XVIII. TELETEXT PICTURE ALIGNMENT

1. Receive a pattern with teletext signal.
2. Select a teletext page.
3. Connect D.C. voltage meter to TP 303 (IC 001 Pin 28) and GND.
4. Adjust T001 to obtain 0.6 ± 0.05V.

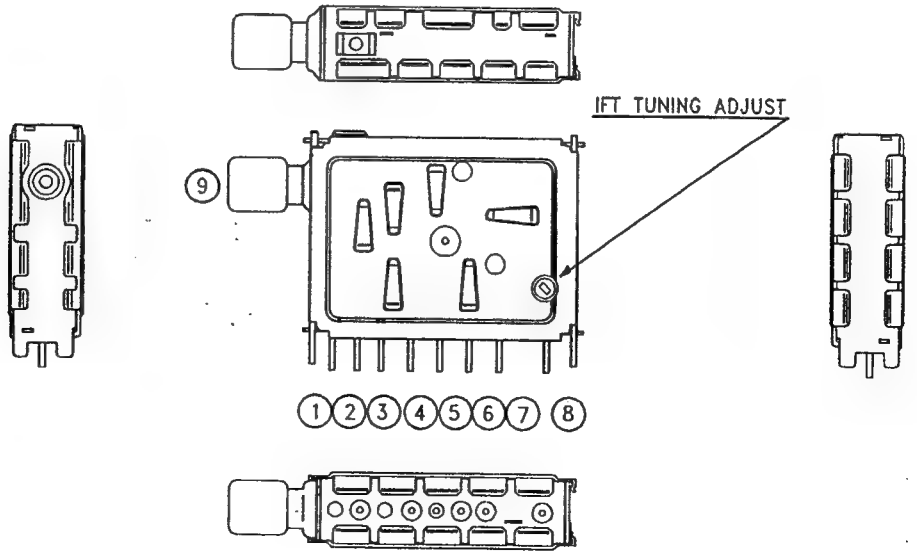
TRANSISTOR AND IC IDENTIFY

	2SD400F		TMS73C47		CF72306		TBA820M XL93LC46		2SD1554 2SD1545
	2SC2482						TA8701N		LA7830
	2SB774T 2SA1015 2SC388A 2SC1815Y		AN5601K		CF70095		HCF4066		LA7910

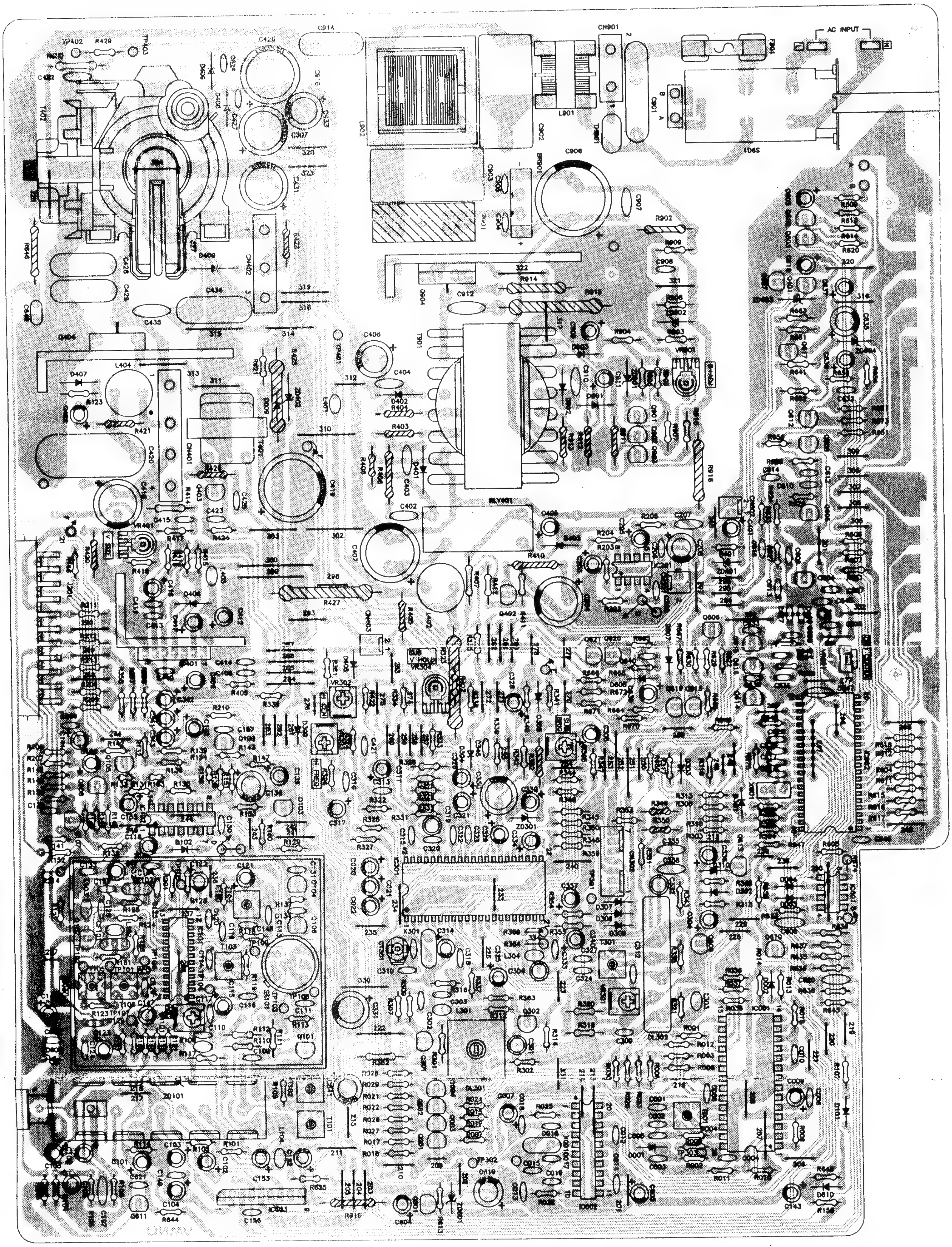
PICTORIAL VIEW OF TUNER

TERMINAL NO.	1	2	3	4	5	6	7	8	9
TERMINAL NAME	BU	VT	BH	AGC	BL	AFT	BM	IF	V/U ANT

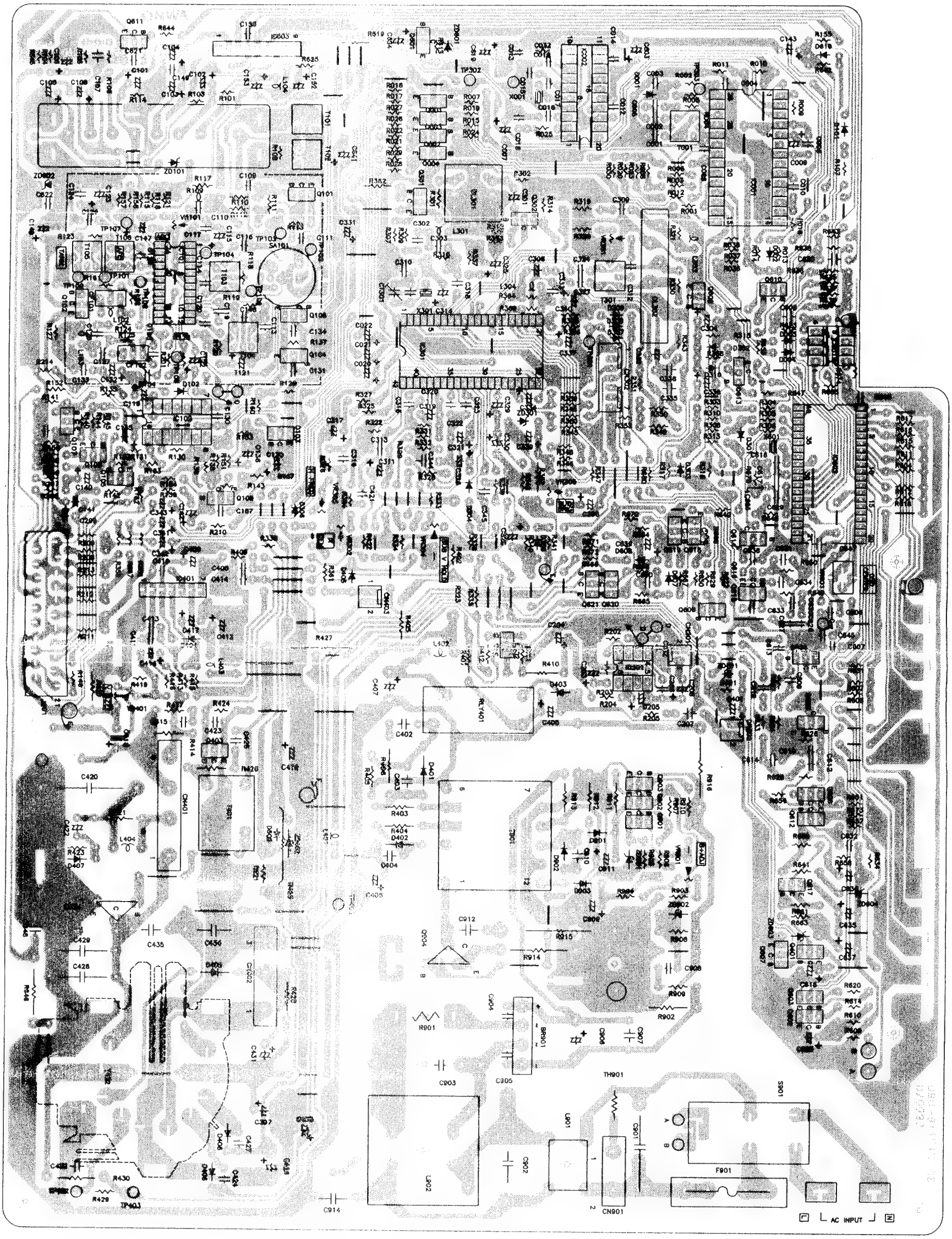
SUPPLY VOLTAGE (V)				
TERM.	ch.	VHF LO	VHF HI	UHF
7	BM	12	12	12
5	BL	12	OPEN	12
3	BH	OPEN	12	OPEN
1	BU	OPEN	OPEN	12



COMPONENT DIAGRAM OF MAIN BOARD (TOP VIEW)



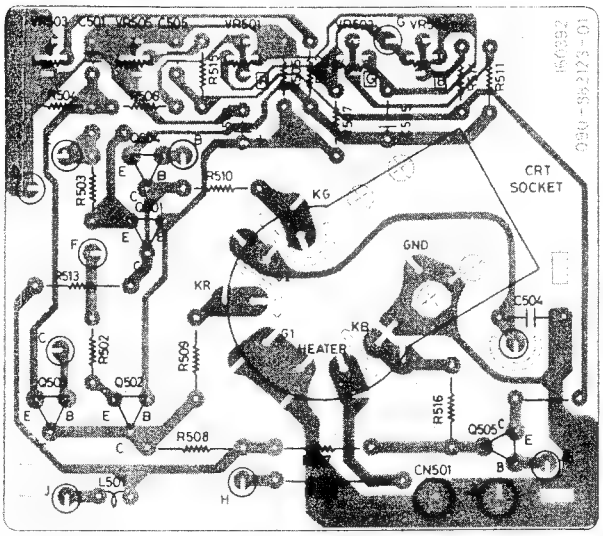
COMPONENT DIAGRAM OF MAIN BOARD (BOTTOM VIEW)



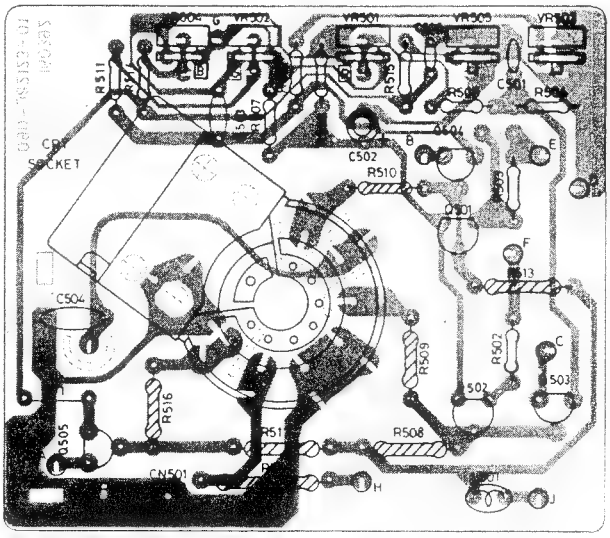
COMPONENT DIAGRAM

CRT BOARD

(BOTTOM VIEW)

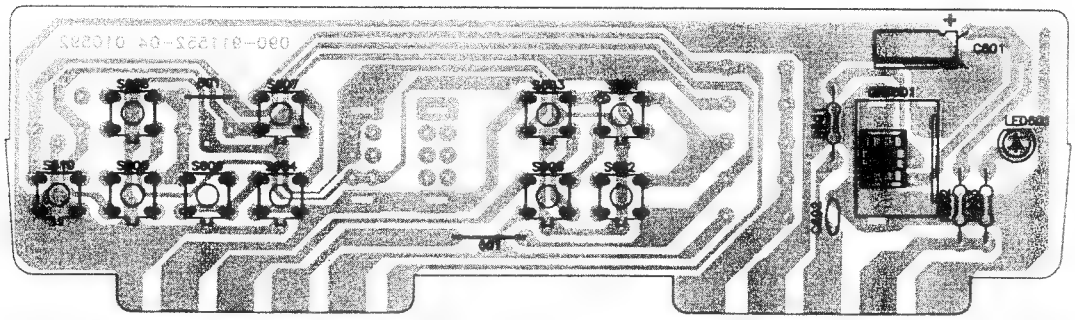


(TOP VIEW)

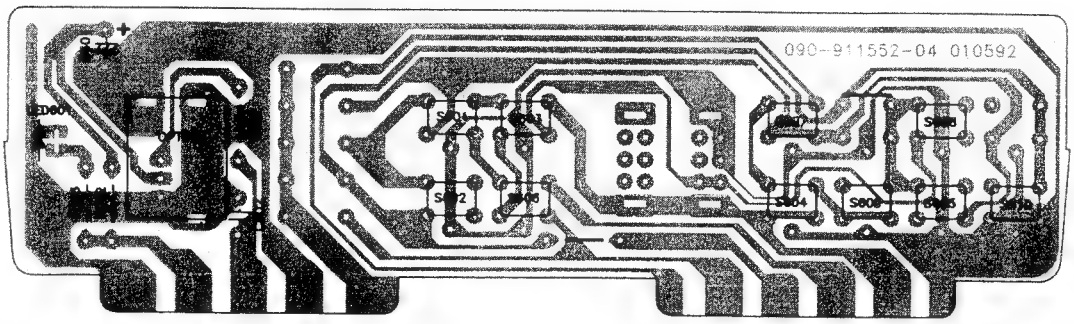


FUNCTION BOARD

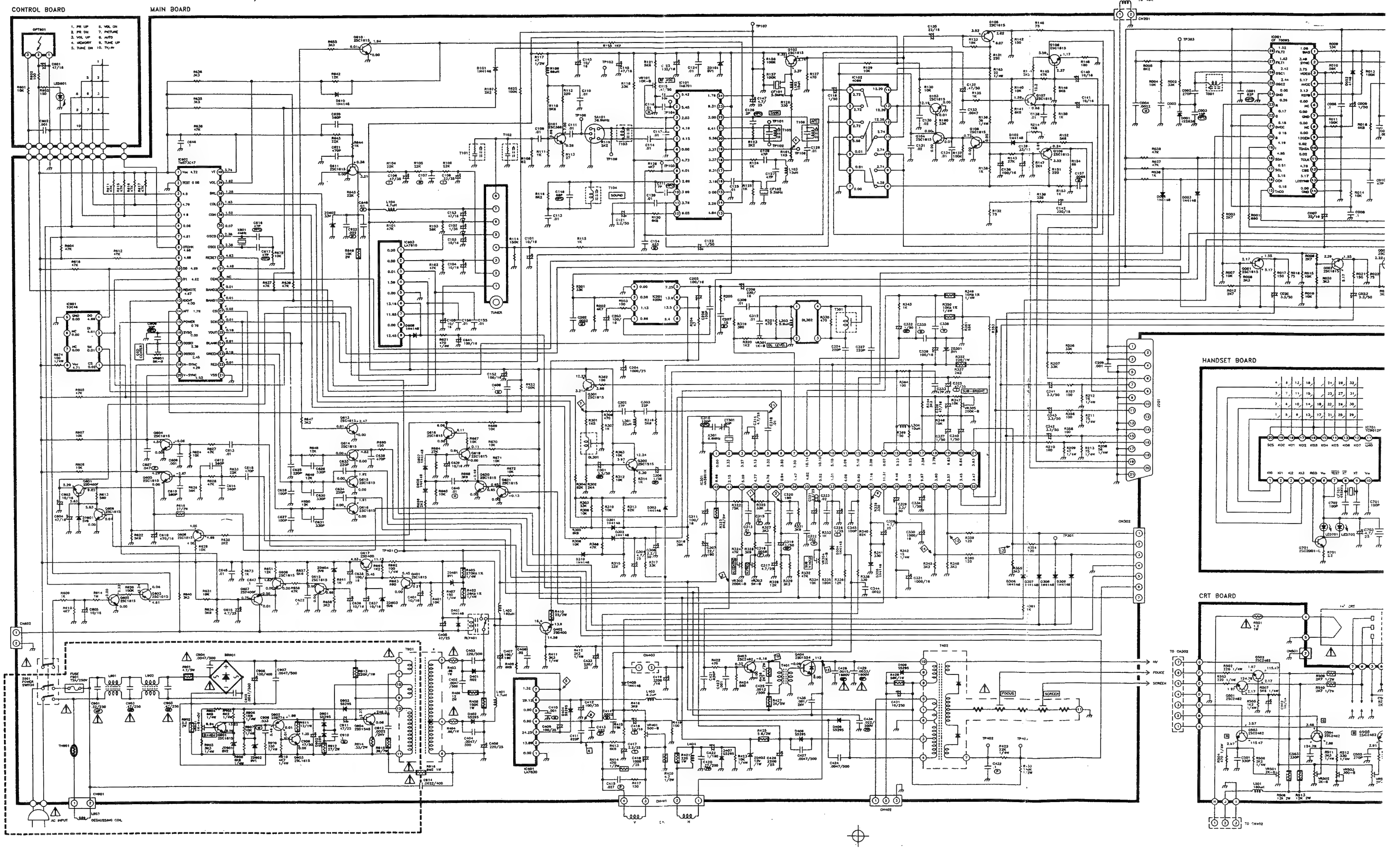
(TOP VIEW)



(BOTTOM VIEW)

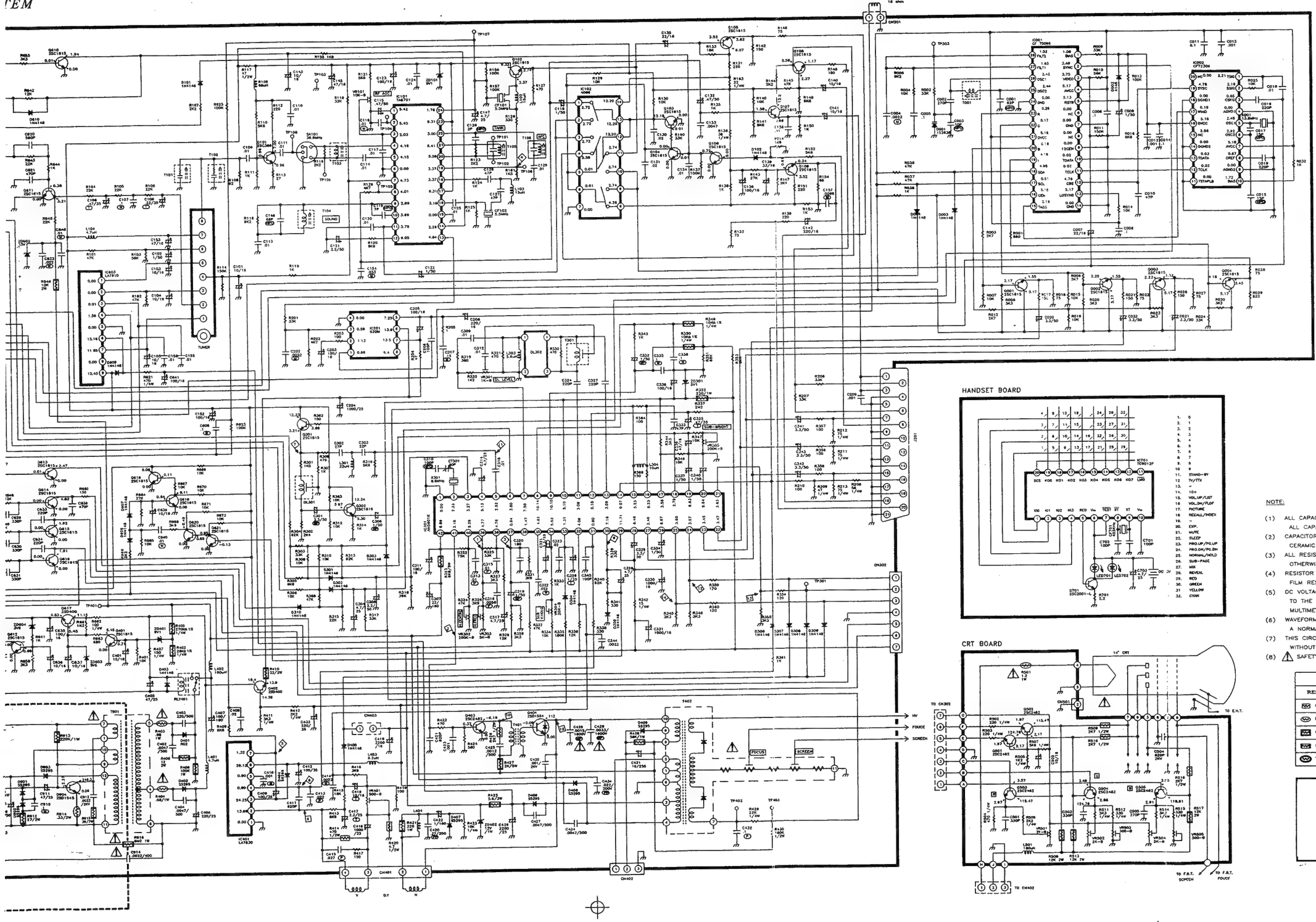


SCHEMETIC DIAGRAM FOR PAL-B/G SYSTEM



DRAWING NO: 9115-06(CT)

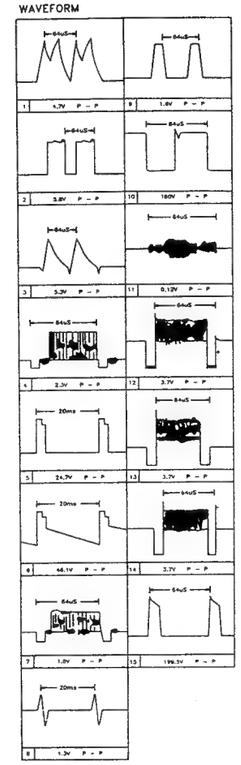
TEM



HANDSET BOARD

CRT BOARD

WAVEFORM



NOTE:

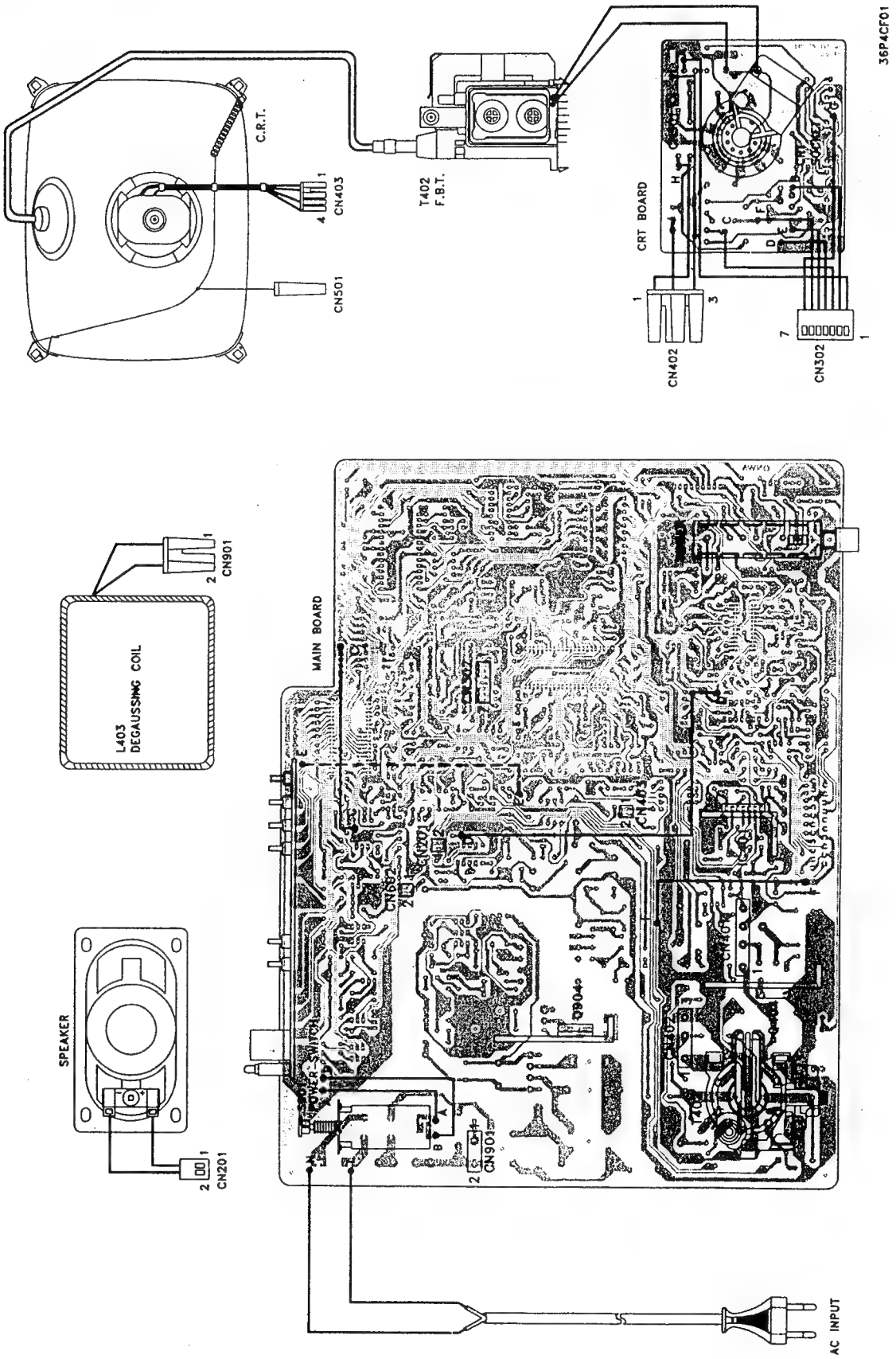
(1) ALL CAPACITORS ARE IN uF UNLESS OTHERWISE NOTED. ALL CAPACITORS ARE 50WV UNLESS OTHERWISE NOTED.
(2) CAPACITOR NOT SPECIFICALLY DESIGNATED ARE CERAMIC ACPACITORS.
(3) ALL RESISTORS ARE IN OHM 1/16 WATT UNLESS OTHERWISE NOTED.
(4) RESISTOR NOT SPECIFICALLY DESIGNATED ARE CARBON FILM RESISTORS.
(5) DC VOLTAGE ARE MEASURED FROM POINT INDICATED TO THE CIRCUIT GROUND WITH A DIGITAL MULTIMETER TEST.
(6) WAVEFORMS ARE TAKEN WITH SETTING CONTROLS TO A NORMAL CONDITIONS (COLOR PHILIPS PATTEN).
(7) THIS CIRCUIT DIAGRAM IS SUBJECT TO CHANGE WITHOUT PRIOR NOTICE.
(8) ⚠ SAFETY CRITICAL DEVICE.

CIRCUIT SYMBOLS		
RESISTOR	CAPACITOR	
NONFLAMMABLE	ELECTROLYTIC	POLYPROPYLENE
FUSEBLE	BI-POLAR ELECTROLYIC	MYLAR
CEMENT	TANTALUM	
METAL OXIDE	METALLIZED POLYESTER	
THERMISTOR	POLYESTER FILM	

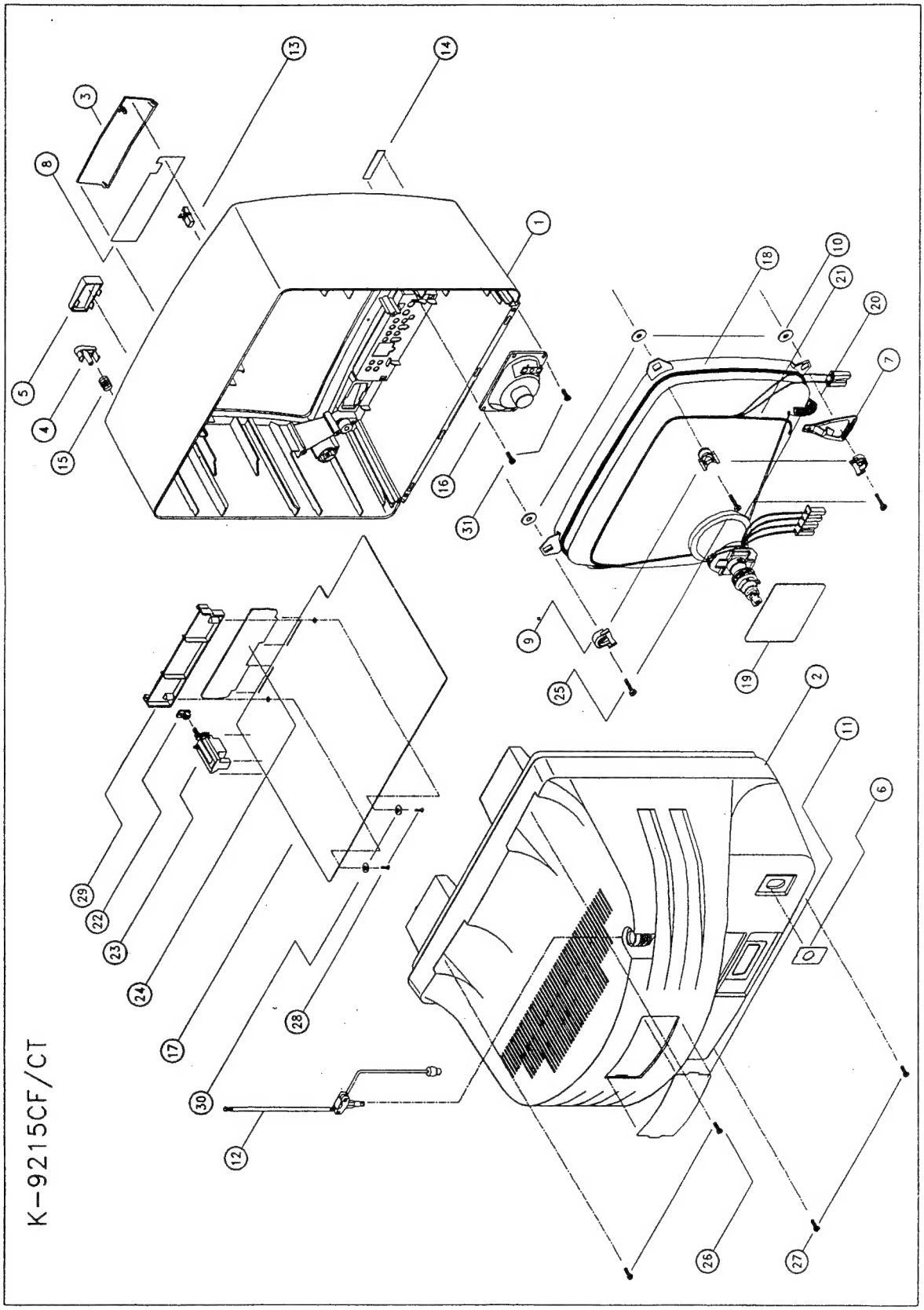
TV 4136VT
TV 6136VT

DEZ.1992

WIRING DIAGRAM



EXPLODED VIEW DIAGRAM



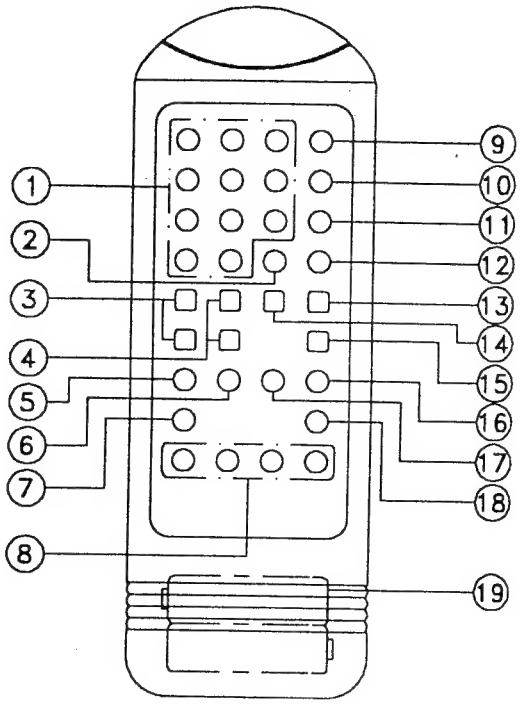
EXPLODED VIEW PARTS LIST:

LOCATION	PARTS NO.	DESCRIPTION	QTY
1	200-921501-01	FRONT CABINET	1
2	202-911503-01	BACK CABINET	1
3	219-921501-01	PANEL DOOR	1
4	292-921501-01	POWER KNOB	1
5	263-921501-01	LENS	1
6	418-911540-01	TUNER COVER W/SILK-PRINTING	1
7	259-911501-01	DEGAUSSING COIL CLIP	2
8	418-911514-01	PRESET OVERLAY	1
9	229-371501-01	C.R.T. MTG CLIP	4
10	334-391501-01	RUBBER RING (T=3mm)	4
11	412-921501-08	MODEL PLATE	1
12	779-911501-01	ROD ANTENNA ASS'Y	1
13	702-391201-02	DOOR LOCKER ASS'Y	1
14	411-371601-05	NAME PLATE	1
15	477-921501-01	COMPRESSION SPRING	1
16		SPEAKER	1
17		MAIN P.C. BOARD ASS'Y	1
18		C.R.T 14"	1
19		C.R.T. P.C. BOARD ASS'Y	1
20	477-371601-01	C.R.T. SPRING	1
21		DEGAUSSING COIL ASS'Y	1
22	239-391201-01	ADAPTOR FOR POWER SWITCH	1
23	046-100001-14	POWER SWITCH	1
24		FUNCTION P.C. BOARD ASS'Y	1
25	614-500238-10	SELF-TAPPING SCREW B/T 5 x 38 mm	4
26	614-500416-10	SELF-TAPPING SCREW B/T 5 x 16 mm	2
27	614-400416-10	SELF-TAPPING SCREW B/T 4 x 16 mm	2
28	612-300110-10	SELF-TAPPING SCREW W/T 3 x 10 mm	2
29	229-911502-01	FUNCTION P.C. BOARD MOUNTING BRACKET	1
30	530-080032-08	FIBRE WASHER	2
31	614-400408-10	SELF-TAPPING SCREW B/T 4 x 8 mm	2

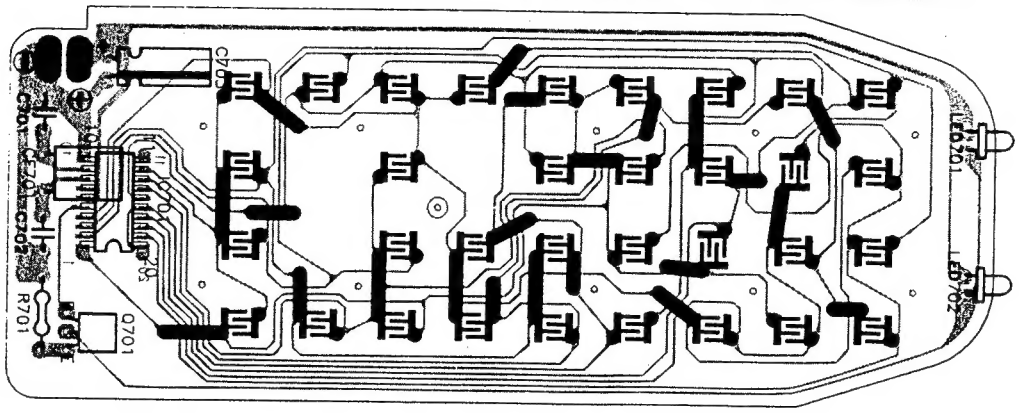
REMOTE HANDSET UNIT

CONTROL LOCATION

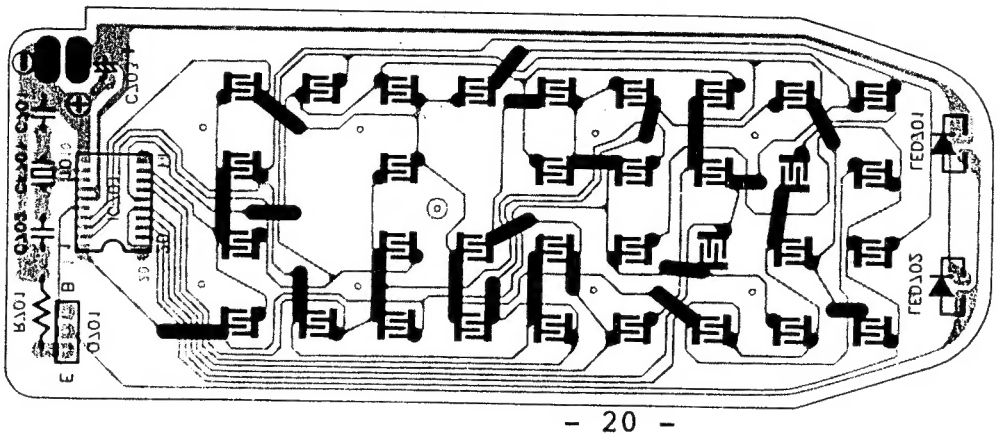
1. Number Buttons (1-9, 0, 10+)
2. Normal Button
3. Program Up/Down Buttons (TV Mode), Page Up/Down Buttons (Teletext Mode)
4. Volume and Picture Function Up/Down Buttons (TV Mode), List/FLOF Buttons (Teletext Mode)
5. Hold Button
6. Subpage Button
7. Mix Button
8. Colour Button (Red, Green, Yellow, Cyan)
9. Stand by Button
10. Sleep Button
11. Recall Button
12. Mute Button
13. TV/AV Button
14. Picture Selector Button
15. TV/Teletext Button
16. Expand Button
17. Reveal Button
18. Index Button
19. Battery Compartment Lid



COMPONENT DIAGRAM OF REMOTE HANDSET P.C. BOARD :



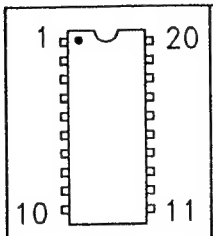
(TOP VIEW)



(BOTTOM VIEW)

M9215-05/21
PART NO.000402-01

TRANSISTOR & IC IDENTIFY

 TOP VIEW	
TC9012F	2SC2001K/L CSB455EB

REMOTE HANDSET UNIT OF EXPLODED VIEW PARTS LIST :

LOCATION	PARTS NO.	DESCRIPTION	QTY
1	201-000401-01	TOP CABINET	1
2	334-000202-01	CONDUCTIVE RUBBER	1
3		HANDSET P.C. BOARD ASS'Y	1
4	477-390203-01	CONTACT SPRING WIRE +,- VE	1
5	477-390502-01	CONTACT SPRING WIRE - VE	1
6	477-390501-01	CONTACT SPRING WIRE + VE	1
7	263-390401-01	FRONT LENS	1
8	203-000401-01	BOTTOM CABINET	1
9	610-260108-00	SELF-TAPPING SCREW R/T 2.6 x 8 mm	1
10	210-000301-01	BATTERY COVER	1
11	411-000403-01	NAME PLATE